FLOW
FOR LOVE OF WATER

ADVANCING PUBLIC TRUST
SOLUTIONS TO SAVE THE
GREAT LAKES

April 22, 2013

MEMORANDUM

To: Michigan Public Service Commission Chairman John D. Quackenbush
Michigan Energy Office Director Steve Bakkal

From: James M. Olson, Chair, and Elizabeth R. Kirkwood, Executive Director

Date: April 22, 2013

Re: ***Elevating the Water-Energy Nexus: Bringing Water to the Center of the Conversation***

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Overview: Water is Central to Our Energy Choices

Si Quaeris Peninsulam Amoenam Circumspice, "If you seek a pleasant peninsula, look about you." This is the motto on the Seal of the State of Michigan. Water defines Michigan – its quality of life and economy. This is what Pure Michigan is all about. Water and energy are inextricably linked. When it comes to shaping and forming an energy policy for Michigan, it must necessarily be compatible and harmonious with Michigan's close connection and dependence on pure and sustainable freshwater for present and all future generations.

Water is used or lost in energy resource extraction, refining and processing, transportation, and electric power generation. And yet, the true value and cost of water is rarely calculated and balanced in our energy decisions. By 2035, the amount of water consumed for current energy production is projected to double, according to the International Energy Agency. This is particularly significant in the context of increasing water scarcity from pollution, waste, drought and human-induced climate change and impacts. Adopting a strong renewable energy policy is good for water, good for jobs, good for the environment, and good for energy affordability.

Given the clear interrelationship between energy, food, and water, we can no longer "silo" these sectors; rather we must improve decision-making with greater integration and collaboration between water resource management and energy production. This calls for a new vision that recognizes the nexus between water, energy, food, and climate change. FLOW ("For Love Of Water") is a proponent for establishing and applying principles that unify and protect the integrity of the water cycle that flows through this nexus. To make this shift, *we must view water in a different light where water becomes the starting point for everything we do*. Without water the health of our people, economy and ecosystem are diminished. If we allow our policies to overwhelm and jeopardize water or run in directions incompatible with protection of the integrity and sustainability of our water, our state faces a "boom or bust" economy and continued erosion of the quality of our lives and entrepreneurial and business capacity.

Role of Climate Change on Water

Compounding this water loss problem from energy production, climate change is the leading cause of water diversions because of dramatic increases in evaporation triggered by heating-trapping greenhouse gases and resulting warming temperatures. Climate change, like other major systemic threats to the Great Lakes and our water, is compelling us to rethink everything, especially water, energy, and food policies, to make sure these policies conform to our fundamental quality of life and the need for clean and plentiful water for us to continue to live and prosper. For example, last year, oil and gas companies outbid farmers in Colorado for allotments of water, reducing the prosperity of a highly important farming industry.

Super-storms, drought, increased evaporation, heavy precipitation, and dramatically falling water levels are all strong indicators that our fossil-fuel and carbon-rich lifestyle and diet is no longer sustainable to assure the integrity and health of the waters of the Great Lakes. Climate change combined with other human actions has exacerbated the gravity of systemic threats to these waters, such as invasive species, pollution, nutrient run off, and lower water levels, causing loss or serious depletion of the food chain for fisheries, closed beaches, impaired boating, shipping, recreation, and tourism – essential to quality of life, ecosystem, and our economy.

Impacts of Fossil Fuels on Water

The recent U.S. natural gas industry shale boom has reignited attention on the water-energy-climate change nexus. The big issue with hydraulic fracking is the water, both in terms of sheer quantity (e.g., 300 million gallons to frack 13 wells in Kalkaska County) and safe disposal of chemical-laden and often toxic wastewater that will never return to our hydrologic cycle. To maintain fossil fuel energy production, more and more water will be lost and displaced from farming and tourism or other industrial needs in order to produce oil and gas from deeper shale reserves. Before Michigan embraces natural gas as a "bridge" fuel, we must conduct a generic analysis of cumulative impacts on water, environment, and health that properly weighs the unprecedented risks that fracking poses to our precious water resources.

For example, in exchange for allowing limited development of the Pigeon River Country State Forest in the 1980s, Michigan established the Natural Resources Trust Fund. Similarly, with the massive quantities of water and clearing of state lands for exploiting natural gas under state and private lands, Michigan must also establish a "Water, Conservation, and Renewable Energy Trust Fund" to finance energy and water conservation and renewable energy in order to assure that lawful unconventional "natural gas" is truly a "bridge" and not a pipeline for water loss with a rippling effect on economic instability.

Additionally, Michigan's coal-fired power plants are the state's largest single source of heat-trapping carbon dioxide emissions, which are detrimentally contributing to climate change by increasing lake evaporation and causing our extreme low water levels in Lake Michigan-Huron. By evaluating energy options in light of the obligation to protect our valuable water resources, new energy production sources or facilities that undermine sustainable water resources would be avoided and existing ones phased out or shut down.

Extreme Low Water Levels on Lakes Michigan-Huron

Here on Lake Michigan-Huron, we hit record low water levels in January of this year – 26 inches below average – according to data collected by the U.S. Army Corps of Engineers since 1918. The water levels issue is at the heart of the Great Lakes' and Michigan's economy, energy and water needs, social fabric, quality of life, and environment. Tourism, shipping, recreation, and shoreline and wetland habitat have been hardest hit. As a short-term measure, Governor Snyder in March of this year signed legislation providing $21 million in taxpayer emergency funds to dredge state harbors that are at risk of becoming impassable because of low water levels. Given this projected trend of extreme water levels caused by increasingly warmer temperatures, we must find affordable, short and long-term solutions that do not diminish the water in our lakes, rivers, and streams, including the Great Lakes.

Role of Renewable Energy, Energy Efficiency and Conservation

We cannot sit idle anymore; rather we must adapt our current fossil-fuel economy to one with low-carbon and low-water footprint. Water in effect must become the center of everything we do, such that shifting to renewable energy becomes the obvious energy choice and addresses the root causes of receding water levels so that we do not jeopardize our current and future way of life.

Michigan is already seeing renewable energy sources like wind becoming more cost effective and affordable to our businesses and citizens than polluting traditional sources like coal and oil. Wind is at 4.5 cents/KWH as opposed to traditional blended energy sources at 7.6 cents/KWH. The benefits of renewable energy are clear: affordable, clean, stable rates, Michigan job generator, minimal water use, and protective of human health and the environment.

In addition, Michigan should promote energy efficiency and energy conservation in all sectors because it is the cheapest, cleanest, and most quickly deployed source of energy.

Charting the Water-Energy Path

Energy, water, and climate change must be viewed as one and the same issue. Moreover, the State of Michigan and its sister states have a responsibility to their citizens under the Great Lakes Compact and the public trust to protect our waters' integrity, flow, and quality. This means that water cannot be ignored as part of our energy policies.

To chart a clean energy future, Michigan must embrace its innovative manufacturing traditions and promote renewable energy sources to reduce pressure on water resources and limit adverse climate change impacts. We urge Michigan to become a leader in renewable energy, and at a minimum compete with other leading states that currently generate 20% or more of renewable power with excellent reliability. Once we chart this path, then we can proudly say we are living up to our motto: "Pure Michigan."